

5-2000

Use of the Attention Deficit/Hyperactivity Disorder Symptoms Rating Scale with Preschool Children

Penny LaDee Phillips
Utah State University

Follow this and additional works at: <https://digitalcommons.usu.edu/etd>

 Part of the [Psychology Commons](#)

Recommended Citation

Phillips, Penny LaDee, "Use of the Attention Deficit/Hyperactivity Disorder Symptoms Rating Scale with Preschool Children" (2000). *All Graduate Theses and Dissertations*. 5577.
<https://digitalcommons.usu.edu/etd/5577>

This Thesis is brought to you for free and open access by the Graduate Studies at DigitalCommons@USU. It has been accepted for inclusion in All Graduate Theses and Dissertations by an authorized administrator of DigitalCommons@USU. For more information, please contact rebecca.nelson@usu.edu.



USE OF THE ATTENTION DEFICIT/HYPERACTIVITY DISORDER
SYMPTOMS RATING SCALE WITH
PRESCHOOL CHILDREN

by

Penny LaDee Phillips

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Psychology

UTAH STATE UNIVERSITY
Logan, Utah

2000

Copyright © Penny LaDee Phillips 2000

All Rights Reserved

ABSTRACT

Use of the Attention Deficit/Hyperactivity Disorder Symptoms
Rating Scale with Preschool Children

by

Penny LaDee Phillips, Master of Science

Utah State University, 2000

Major Professor: Dr. Gretchen A. Gimpel
Department: Psychology

Attention deficit/hyperactivity disorder (ADHD) is a common disorder among children and is usually diagnosed during the school years, although symptoms must be present before age 7. As more children enter into preschool programs, there is great opportunity for early identification and treatment of behaviors related to ADHD. The earlier children with symptoms of ADHD are treated, the better their chances of having successful school experiences. Unfortunately, diagnosing ADHD during early childhood is difficult, in part because there is a lack of adequate assessment instruments designed for this age group. The instruments that are available generally do not focus specifically on ADHD symptomology. The ADHD-SRS, a rating scale specifically developed for ADHD assessment, was designed for school-age (K-12) children. The present research study investigated the psychometric properties of the ADHD-SRS with a preschool-aged sample. The participants were 414 preschool children who were rated by their teachers

and/or parents using the ADHD-SRS. The results shed some light on normative levels of ADHD behaviors in preschool children. It was found that the ADHD-SRS has good psychometric characteristics (e.g., internal consistency, convergent/divergent validity) for this population. Teacher and parent concordance was moderate (.31), consistent with other research findings. Limitations, clinical implications, and directions for future research are addressed.

(80 pages)

DEDICATION

This study is dedicated to the children: May we as educational professionals appreciate the unique qualities of each child while supporting her/him in being the best that s/he can be.

ACKNOWLEDGMENTS

I would like to express my deep appreciation to my major professor, Dr. Gretchen A. Gimpel, for seeing this project through with me. Dr. Gimpel has invested countless hours providing me guidance and encouragement throughout the process. I especially appreciate her gentle nudging to “keep going” in meeting timelines and standards of quality. This project would not have come to fruition without her direction, encouragement, and feedback.

I would also like to thank the members of my committee for taking the time to provide me their wisdom and their counsel. To Dr. Carla Reyes I would like to say thanks for sharing with me her insights, enthusiasm for children, and an interested ear. To Dr. Frank Ascione I would like to express my gratitude for his thoughtful suggestions and sharing his expertise. And finally, to Dr. Kathy Hoff, I owe a big thank you for her willingness to jump in at the middle of this project.

In addition to my committee, I would like to acknowledge the support of the Early Childhood Department within the Davis County School District, whose cooperation was crucial to this study. On a personal note, I would like to express my tremendous appreciation for the opportunity to work for the Davis Head Start program. Through my employment with them I have gained invaluable experiences in working with students, teachers, and parents that will continue to bear fruit throughout my professional career.

I wish to express my eternal thanks to my parents, Jim and Judy Fleming, for instilling in me the characteristics of hard work, persistence, and integrity. To my aunt,

Dr. Nancy LaDee Fleming, I wish to convey my profound appreciation and respect for showing me the value of education and that the keys to success are within my reach. I am also thankful for her constant support of my endeavors. To my husband, Larry, I owe an inexpressible amount of gratitude. It is his unending, incredible support and encouragement that have continued to motivate me in finishing what I start. And to my children, Travis and Cheyenne, I wish to leave as a legacy the importance of education as they strive toward their own successes.

Penny L. Phillips

CONTENTS

	Page
ABSTRACT	iii
DEDICATION	v
ACKNOWLEDGMENTS	vi
LIST OF TABLES	ix
CHAPTER	
I. INTRODUCTION	1
II. REVIEW OF RELATED LITERATURE	4
III. METHOD	29
IV. RESULTS	35
V. DISCUSSION	41
REFERENCES	51
APPENDIXES	61
Appendix A: Permission Letter	62
Appendix B: Teacher-Parent Item Comparison Graphs	63

LIST OF TABLES

Table		Page
1	Descriptive Data for the Subjects (<u>N</u> = 414)	30
2	Descriptive Statistics for Parent and Teacher Ratings on the ADHD-SRS .	36
3	Descriptive Statistics for Head Start Children and Community Preschool Children--Teacher Ratings	37
4	Descriptive Statistics for Head Start Children and Community Preschool Children--Parent Ratings	38
5	Correlations Between the ADHD-SRS Total Score and the BASC Subscales (<u>n</u> = 73)	39

CHAPTER I

INTRODUCTION

Attention deficit/hyperactivity disorder (ADHD), characterized by problems with attention, activity, and/or impulsivity, is a common reason for mental health referrals in childhood. The estimated prevalence of ADHD is between 3-5%, with boys outnumbering girls 3 to 1 (Barkley, 1998). Because of the potentially negative impact ADHD has on the child's life (e.g., academic problems, social problems), as well as the problems that may coexist with ADHD (e.g., conduct disorder, depression), it is essential to diagnose this disorder early. Early diagnosis allows for early and appropriate treatment.

A large portion of the literature on ADHD assessment and treatment is directed at the school-age population, with little attention given to the preschool population. Often, children are not diagnosed as having ADHD until after beginning school even though symptoms must be present before age 7 for children to receive a diagnosis of ADHD. Time that could have been spent ameliorating the difficulties experienced by these children is lost. Because of the focus on the child and adolescent age range, many of the rating scales used in ADHD assessment are developed for the older child. It is imperative that assessment measures for ADHD targeting the preschool age range be developed so that clinicians can accurately diagnose this disorder in young children. Because many of the symptoms of ADHD may be considered typical of preschool children, it is important to have rating scales with separate norms for the preschool

population that take into account what is "typical" and "normal." Further, many instruments focus on a wide range of problems instead of focusing on ADHD specifically and many of those that do focus on ADHD specifically have not taken into account the most recent version of the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (American Psychiatric Association, 1994; Holland, 1997). One scale recently developed, the ADHD Symptoms Rating Scale (ADHD-SRS), has taken into account the DSM-IV (APA, 1994) criteria but was developed using children and adolescents (grades K-12; Holland, Gimpel, & Merrell, 1997). This scale has excellent psychometric properties for the child and adolescent population (Holland, 1997; Holland, Gimpel, & Merrell, 1998), but there is currently no preschool version of this scale. To determine the appropriateness of the ADHD-SRS for the preschool population, the psychometric properties need to be investigated using a sample of preschool children.

A related issue involves parent and teacher ratings and the degree of concordance between such ratings. Because ADHD must occur in at least two settings, according to the DSM-IV (APA, 1994), it is important to involve both teachers and parents in the assessment process. There tends to be low agreement between these two sources but studies examining this issue focus on school-age children. It is therefore important to explore the degree of consistency in ratings between parents and teachers with regard to the preschool population, and to develop separate norms for parent and teacher raters, if needed.

In sum, it is problematic that there is a lack of instruments available to use to assess ADHD specifically in the preschool population. The purpose of this study was to

investigate the psychometric properties of the ADHD-SRS, a previously developed and validated rating scale, and degree of parent-teacher agreement on this scale, using a preschool sample.

CHAPTER II

REVIEW OF RELATED LITERATURE

The following literature review will address issues related to ADHD in the childhood population, with a particular focus on preschool age children. These issues include: (a) a discussion of preschool behavior problems in general, (b) a discussion of ADHD and related issues, and (c) diagnostic/assessment issues related to preschool children.

Behavior Problems of the Preschool Child

Although it is recognized that many problems children face can be identified in early childhood, that such problems are likely to persist into later childhood, and that early problems often result in negative outcome, there has generally been a lack of research attention to behavior problems in preschool children (Campbell, 1994; Campbell & Ewing, 1990; Campbell, Pierce, March, Ewing, & Szumowski, 1994; Campbell, Szumowski, Ewing, Gluck, & Breaux, 1982; Egeland, Kalkoske, Gottesman, & Erickson, 1990; Szumowski, Ewing, & Campbell, 1986). As a result, according to Campbell and Ewing (1990), not much is known about the early course and clinical implications of problems beginning in the preschool years, although it does seem likely that many problem behaviors will continue past the preschool years. For example, in Campbell and Ewing's (1990) sample of "hard-to-manage" preschool children, it was found that children with significant problems at age 3 continued to exhibit problems at age 6 and

were very likely to have problems at age 9 as well. This section of the literature review will address the nature of preschool behavior problems, correlates, and persistence and outcome of early behavior problems as reported in the existing literature.

Nature of Preschool Behavior Problems

Campbell (1995) has reviewed recent research examining the behavior problems of preschool children as well as the prevalence, correlates, and stability of these behavior problems. These studies rely on adult reports (i.e., parents, preschool/daycare teachers) of the behavior of children in their care. Campbell found that, in general, the research have suggested that these adults are most concerned about "management difficulties, overactivity, inattention," and peer/sibling interactions. Likewise, Campbell et al. (1982) suggest that problems with overactivity, irritability, and noncompliance often present themselves in infancy and toddlerhood.

Campbell (1994) documented that both teachers and parents report problems with overactivity, inattention, aggression, and noncompliance. Campbell attempted to extend previous findings on the nature of preschool problems using a larger preschool sample ($n = 112$: 69 parent and teacher referred hard-to-manage boys; 43 control children) and following up two years later when the children were 6 years old. Campbell found that externalizing problems warranting intervention (severe enough to fall within the clinically significant range as rated by both parent and teacher) do exist within the preschool population and are likely to persist into school age (47% when ratings from at least one informant were considered; 28% when two informant ratings were considered).

In a study by Egeland et al. (1990), problems with acting out ($n = 17$), withdrawal ($n = 7$), and attention ($n = 3$) were identified within a sample of preschoolers ($N = 96$). They found that children having difficulties in preschool were more likely to have difficulties once they reached school age than were comparison children ($n = 22$). For example, 47% of the children in the acting out group were experiencing clinically significant problems in second grade.

In a sample of 462 preschool age children enrolled in Head Start, teacher ratings reflected that hyperactivity/distractibility was the most common type of problem (14.7%) among the children who participated in this study (Anderson, 1983). Hostile/aggressive problems (2.8%), and anxious problems (6.7%) were also found among the children but were less prevalent. In addition, some children had "multiple" problems (4.8%, elevated scores on two components), and others were considered "unclassified" (2.6%, high scores on all three components). Anderson concluded that these results highlight the need for early assessment and identification of behavior problems in the preschool years.

In an investigation of Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised (APA, 1987) disorders in a sample of 104 low SES preschoolers (mean age of 4.89 years), it was found that 21.9% of these preschoolers had behavior disorders (including both internalizing and externalizing disorders), as reported by their mothers (Keenan, Shaw, Walsh, Delliquadri, & Giovannelli, 1997). Simple phobia was the most common (11.5%) "definite" disorder and oppositional defiant disorder was the most common (12.6%) disorder in the "subthreshold" range (meeting more than half of the required number of symptoms, but not enough to meet the full diagnostic criteria).

Prevalence for a "subthreshold" classification of ADHD was found among 10.3% of the preschoolers. This finding is consistent with rates reported for low-income school-age children. Keenan et al. (1997) concluded: "By extending the window of assessment to [the preschool] period, we may improve our understanding of etiology, prognosis, and ultimately the prevention of mental disorders" (p. 626).

As a whole, studies on behavior problems in the preschool years indicate that externalizing behaviors are the most common problems seen in preschool children. Many studies on preschool behavior problems, though, have focused exclusively on boys (Heller, Baker, Henker, & Hinshaw, 1996). Although gender differences in terms of prevalence of disorders are often identified in school-age children (with more boys having externalizing problems than girls) and adolescents (with more girls having internalizing problems than boys), Campbell (1995) found that the literature is inconsistent with regard to gender differences for preschool behavior problems. Taken as a whole, the effects of gender on behavior problems seem to be "less pronounced" among preschool children (Lyons-Ruth, Easterbrooks, & Cibelli, 1997). For example, Heller et al. (1996) found no significant gender differences in their sample of preschool children (40 girls and 37 boys) with regard to reports (teachers and mothers) of externalizing behavior over time (from preschool to first grade). This suggests that in the early childhood years, girls and boys are equally likely to have problem behaviors. However, it is unclear from the existing research with preschool-age children just when gender differences do actually emerge (Campbell, 1995). Studies that focus exclusively on boys do little to shed light on this issue.

Campbell (1995) put the findings with regard to preschool behavior problems within a developmental context. She stated that some problems as perceived by adults are developmental in nature. For example, the difficulties of sharing or taking turns may reflect that the child is learning such prosocial behaviors and the skill of perspective taking is just emerging during the early childhood years. Thus, if the problems are due to development, it would be expected that they would be transient and not persist into later childhood. It is therefore crucial to determine which behaviors represent symptoms of more long lasting problems and which are more short term, and likely to disappear with maturity. By determining which behaviors are indicative of continuing problems, clinicians will be better prepared to provide early treatment for children.

In trying to predict later behavior problems, research on attachment theory has been employed. Although results are tentative at this time, due to conflicting findings, there seems to be some evidence that an insecure attachment style is associated with the development of later problems in young children (Campbell, 1998). Other researchers (e.g., Greenberg, DeKlyen, Speltz, & Endriga, 1997; Lyons-Ruth et al., 1997) have proposed that insecure attachment may be an important risk factor, among others (e.g., family adversity), for the onset of aggressive behavior problems. It makes sense that maladaptive relational styles in early life would provide a "red flag" for later problems, because the very nature of many childhood problems implies a disruption in social interactions. Campbell (1998, p. 14) did, however, caution that more research on this is "sorely needed."

Pavuluri, Luk, and McGee (1996) also argued for the early identification and treatment of behavior problems. Because of the frequency of behavior problems (about one in five children) and the persistence of many problems as the children get older, these researchers suggest that early identification and treatment may help decrease the problems at school age. Pavuluri et al. identified preschool staff as one pathway through which parents with preschoolers (30-60 months of age) experiencing problems can get help. This points to the importance of developing effective assessment instruments that can be used by preschool staff (i.e., teachers) to identify behavior problems, enabling them to then work with the parents in helping their children.

Correlates of Preschool Behavior Problems

In addition to the problems described above, preschool children with behavior problems often experience other difficulties as well (Campbell, 1995; Campbell et al., 1994). Campbell (1995), in her review of current literature, writes that "hard to manage" children often have difficulties with organization and impulsivity, are unfocused, disruptive, and noncompliant.

When observed in a play situation, preschool boys with behavior problems frequently "flit from toy to toy" and are more aggressive and active in the quality of their play (Campbell et al., 1994). In addition, these boys were observed to be more noncompliant during clean-up than were boys without behavior problems.

Hard-to-manage preschool boys also have difficulties with peer interactions (i.e., "aggressive encounters;" Campbell et al., 1994). Campbell and her colleagues found that

although these interactions seem to be age appropriate, they are "somewhat more intense and negative than the interactions of control boys" (p. 848). Language difficulties (e.g., speech delay) and cognitive difficulties are also associated with preschool behavior problems (Barkley, 1990; Campbell, 1995).

Persistence and Outcomes of Preschool Behavior Problems

As already mentioned briefly, research demonstrates the stability of preschool behavior problems into the school years (Campbell, 1987, 1994, 1995; Campbell et al., 1994; Egeland et al., 1990; Heller et al., 1996). Based on a sample of "hard-to-manage" preschoolers, Campbell (1995) reported that many children who show problems with inattention and discipline continue to demonstrate a wide range of behavior problems as well as academic difficulties into elementary school. For example, at age 9, 48% of the children in the initial group experiencing difficulties had met criteria for externalizing problems according to the Diagnostic and Statistical Measurement of Mental Disorders-Third Edition (APA, 1980). An additional follow-up when children in the same sample were 13 years old showed that problems were still present. These children were less socially adept, more hyperactive, and more aggressive as rated by themselves and their caregiver (Campbell, 1995).

Heller et al. (1996) not only found that preschool problems persisted into the later school years, but that they were also related to poor outcomes, such as school underachievement and antisocial behavior. Preschool problems, along with factors of family stress, maternal depression, and negative parent-child interaction were predictive

of problems in school. This group of researchers identified three groups within a sample of children in preschool ($N = 77$) using teacher and parent versions of the Child Behavior Checklist (CBCL). These groups included a "pervasive behavior-problem" group (those receiving scores within the clinical range on both mother and teacher reports or on one report and within the borderline range on the other), a "borderline behavior problem group" (those receiving marginal scores from one or both raters or one within the clinical range and the other within the nonclinical range), and a "comparison" group (rated within the nonclinical range by both). At follow-up when these children were in first grade, most of those classified as pervasive were similarly classified. Indeed, 94% of those initially classified as pervasive fell within the pervasive or borderline groups at follow-up, indicating the persistence of problems. In addition, half of the children in the borderline group no longer exhibited significant problems at follow-up and none had moved to the pervasive group. Thus, researchers recommend that "future studies should pay particular attention to the risk and protective factors operating for these marginal-problems children" (p. 386).

Campbell (1995) looked at the predictors of the stability of preschool problems into the school years. The more extreme externalizing behaviors in preschool (i.e., "peer problems, overactivity, and management difficulties") were predictive of persistence. Early age at onset of problems was another predictor of persistence. Campbell stated that problems at ages 3 and 5 are the "best predictors of later antisocial outcome." A family context of "ongoing marital stress, stressful life events, and maternal malaise" is another predictor of continued difficulties. Importantly, "ongoing" seems to be the key to

predicting problem persistence and, conversely, improvement in the family situation is related to improvement in the problem behavior(s) (Campbell, 1995).

In a longitudinal study of parent-referred problem 3-year-old children, Campbell (1987) identified children whose problems persisted at age 6 and children whose problems improved by age 6, along with a control group. She found that the improved group still had problems compared to the control group, but they were less severe (e.g., less problems with aggression). The persistent problems group had problems that were relatively severe and developmentally inappropriate (e.g., hyperactivity, distractibility, aggression, and antisocial behavior). Campbell concluded that the initially intense, extreme, and multiple problems were less likely to change with development and more likely to predict continued problems. Moreover, Campbell, Ewing, Breaux, and Szumowski (1986) found that within a sample of 32 parent-referred 3-year-old children having severe problems of aggressiveness and overactivity, one third of these children met the criteria for a diagnosis of ADHD at age 6—in addition to continued problems overall (e.g., inattention, impulsivity).

Attention Deficit/Hyperactivity Disorder

ADHD is a common childhood disorder, with a prevalence of 3-5% in the school-age population (Benasich, Curtiss, & Tallal, 1993; Bussing, Schuhmann, Belin, Widawski, & Perwien, 1998; Mulhern, Dworkin, & Bernstein, 1994; Palomares, Thompson, & Reynolds, 1991; Soleil, 1995) although some prevalence estimates are as high as 9% (Teicher, Ito, Glod, & Barber, 1996). With regard to possible causes, research

is increasingly pointing to genetic and neurological pathways as being the "greatest contributors" to the problem, leading to a growing consensus among experts in the field (Barkley, 1998; Soleil, 1995). For instance, findings from genetic research indicate that siblings of children with ADHD are two to three times more likely to have ADHD themselves (American Academy of Child and Adolescent Psychiatry, 1997).

Neuropsychological research, in spite of inconsistencies in general, does provide more supportive evidence in pointing to deficits in prefrontal lobe functioning affecting behavioral inhibition and executive functioning (Barkley, 1998). Soleil (1995) identified structures (e.g., basal ganglia) and neurotransmitters (e.g., dopamine) that may be implicated in ADHD.

This knowledge, as it expands and becomes clearer, has important implications for the assessment of ADHD. If ADHD has a strong genetic component and can be identified by its impact on brain structures and functioning, we should be able to detect it earlier on. This supports the importance of developing techniques for early identification and treatment in ameliorating the impact of the disorder.

This next section in the literature review will address the DSM-IV (APA, 1994) criteria, correlates/comorbidity, and outcomes of ADHD. Because of the lack of information on ADHD in the preschool population, this section will focus on ADHD in general, across the childhood years.

DSM-IV Criteria

The "essential" diagnostic feature of ADHD, according to the DSM-IV (APA,

1994), is a "persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development" (p. 78). New to this version of the DSM is the recognition of these two dimensions of ADHD that can result in three subtypes: ADHD with a combination of hyperactivity-impulsivity and inattention; ADHD with predominant symptoms of inattention; and ADHD with predominant symptoms of hyperactivity-impulsivity. To result in a diagnosis of ADHD, the symptoms must be present for longer than 6 months, result in some impairment of functioning, and symptoms must be present before age 7. Also, symptoms must occur in at least two settings (e.g., home and school). Finally, to be considered as ADHD, symptoms cannot be attributed to another disorder or be part of pervasive developmental disorder, schizophrenia, or another psychotic disorder.

Barkley (1998) has suggested that inattention and overactivity, in addition to impulsivity, are the "primary symptoms" that characterize ADHD (see also Soleil, 1995; Wicks-Nelson & Israel, 1991). Inattention involves difficulties with sustained attention tasks, alertness, and distractibility. According to the DSM-IV (1994), inattention can also be manifested by behaviors such as making careless mistakes, messy work, and disorganization.

The manifestation of hyperactivity is described as an excessive level of activity that is inappropriate for the child's age/developmental stage (Barkley, 1998; Wicks-Nelson & Israel, 1991). This is reflected in parental and teacher descriptions such as "restless" and "always on the go/run" (Barkley, 1998; Wicks-Nelson & Israel, 1991). Further descriptors of hyperactivity include "fidgetiness" and acting as if being "driven by a

motor.” The DSM-IV (APA, 1994) states that hyperactive symptoms can vary with age, and caution should be exercised when assessing young children for the disorder (as some hyperactivity may be typical behavior for toddlers/preschoolers).

Barkley (1998) referred to impulsivity as the “hallmark” of ADHD. Impulsivity is characterized as a difficulty in inhibiting behavior (Barkley, 1998; Wicks-Nelson & Israel, 1991). The child simply seems to be unable to control his/her behavior. Impulsivity can be further described by impatience, blurting answers without waiting for the whole question to be asked, and being accident prone (DSM-IV, APA, 1994).

With regard to preschool children, Barkley (1998) stated that by age 4, children can exhibit problems with inattention to such a degree to be of concern to their parents and teachers. However, only 48% of preschoolers whose problems are exhibited to such a degree as to warrant a diagnosis of ADHD will continue to have this diagnosis by school age (Barkley, 1998). This illustrates the need to look at additional aspects of the disorder such as intensity of symptoms and the length of time that symptoms persist in determining whether a significant problem exists (Barkley, 1998; Campbell, 1995). Although the DSM-IV (APA, 1994) states that ADHD is difficult to establish in children younger than 4, Lahey et al. (1998) investigated the validity of the DSM-IV criteria for use with preschool children and determined that the criteria are valid for 4- to 6-year-old children.

Correlates/Comorbidity

ADHD has been found to coexist with various academic and behavior problems

(Alessandri, 1992; AACAP, 1997; Barkley, 1998; Benasich et al., 1993; Biederman et al., 1998; Bullock, Yurko, Solis, & Hogan, 1995; Cantwell & Baker, 1991; DuPaul & Barkley, 1998; Mulhern et al., 1994; Palomares et al., 1991; Paulauskas & Campbell, 1979; Pisecco, Baker, Silva, & Brooke, 1996; Sabatino & Vance, 1994; Wicks-Nelson & Israel, 1991). Children with ADHD are more likely to have a learning disability (Barkley, 1998; Soleil, 1995) and experience academic failure (Wicks-Nelson & Israel, 1991). For example, Cantwell and Baker (1991) explored the relationship between ADHD and learning disabilities (LD). Ninety-one children in their sample of 300 speech/language impaired 9-year-olds had LD. Of these, 53% also had ADHD. In addition, Barkley (1998) reported that children with ADHD often have standardized intelligence test scores that are 7-15 points lower than same-aged peers.

Also associated with ADHD are conduct problems, aggression, and oppositional/defiant behaviors (Barkley, 1998; Biederman et al., 1998; DuPaul & Barkley, 1998; Satterfield & Schell, 1997; Soleil, 1995; Wicks-Nelson & Israel, 1991). Many clinic-referred children and adolescents with ADHD (35-60%) also meet the criteria for oppositional defiant disorder (Barkley, 1998). Also, there seems to be an overlap of conduct disorder symptoms with ADHD (Taylor, Chadwick, Heptinstall, & Danckaerts, 1996; Wicks-Nelson & Israel, 1991) making it somewhat difficult to distinguish between the two. For example, Wicks-Nelson and Israel have suggested that "[d]epending on the sample, 30-90 percent of children in one category will also be classified in the other" (1991, p. 191). Further, Taylor et al. (1996) conducted a follow-up of 112 sixteen- to eighteen-year-old boys (31 with hyperactivity, 24 with conduct

problems, 25 with mixed problems, and 32 controls), who were between 6 and 7 when initially rated. They were interested in examining whether the risk for later problems could be accounted for by overlap in symptoms. Taylor et al. concluded that hyperactivity in childhood predicted later conduct problems but that conduct problems in childhood were not predictive of later hyperactivity. Based on this conclusion, they implicate hyperactivity as the "primary problem."

Social problems and poor peer relations are yet another correlate of ADHD (Campbell & Paulauskas, 1979; DuPaul & Barkley, 1998; Paulauskas & Campbell, 1979; Soleil, 1995; Wicks-Nelson & Israel, 1991). Children with ADHD often face negative reactions to their "bothersome, intractable, and socially awkward" behavior (Wicks-Nelson & Israel, 1991). Also, children with ADHD tend to be very aggressive, physically as well as verbally (Wicks-Nelson & Israel, 1991). These behaviors often lead to rejection of children with ADHD by their peers (Wicks-Nelson & Israel, 1991). Play may also be disrupted. Low SES preschoolers diagnosed with ADHD were shown to be involved in play less frequently, less involved with peers, and the quality of play was less mature and less constructive than comparison children (Campbell, 1995). In addition, children with ADHD may experience poor self-esteem, anxiety (27-30% meeting diagnostic criteria for an anxiety disorder), depression (9-32% meeting criteria for major depression), and somatic complaints (24% of ADHD boys; 35% of ADHD girls meeting diagnostic criteria for a somatization disorder; Barkley, 1998).

Outcomes

With regard to ADHD specifically, Barkley (1998) reported that 70-80% of children with ADHD will continue to exhibit symptoms inappropriate to their developmental level into adolescence. Children with ADHD are at greater risk for later difficulties in adolescence, including depression, poor self-esteem, school failure, antisocial behavior, conduct disorder, and abuse of alcohol and/or drugs.

The chance of ADHD persisting into adulthood is about 50-65% (Barkley, 1998). Possible negative outcomes for these adults include lower level of education, lower SES, substance abuse disorder (about 12%), and antisocial personality disorder (about 25%). Barkley cautioned that these data may be of limited generalizability, as they were gathered in the 60s and 70s in larger cities, and may be a function of the time period and area.

Recent studies have also documented the continuity and potential negative outcomes of ADHD (Biederman et al. 1998; Fischer, Barkley, Fletcher, & Smallfish, 1993; Greene, Biederman, Faraone, Sienna, & Garcia-Jetton, 1997; MacDonald & Achenbach, 1996; Mannuzza, Klein, Bessler, Malloy, & Hynes, 1997; Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1998; Satterfield & Schell, 1997; Taylor et al., 1996). Mannuzza et al. (1998), for example, investigated the adult outcomes of having ADHD as a child. They found that most of the participants in their study ($N = 85$ out of an original 104) who had ADHD during childhood did not have it as adults. In fact, only 4% still were diagnosed with the "full syndrome." However, many (one third) of these adults had clinically significant antisocial and/or substance use problems.

Satterfield and Schell (1997) looked at the California criminal records of 89 hyperactive and 89 control subjects between the ages of 19 and 25. The hyperactive participants had been diagnosed with ADHD between the ages of 6-12 years. As adolescents, hyperactive children were more likely to be arrested (46% vs. 11% of controls). In addition, the hyperactive children were more likely to be arrested at an earlier age than controls (10-18 years vs. 13-18 years). Sixty-one percent of the hyperactive group were arrested before age 15, compared with only 18% of the control group. Early arrest for felony offense in adolescence, along with high ratings of lying and stealing in childhood, were found to be predictors of criminality in adulthood. Satterfield and Schell concluded that childhood hyperactivity puts children at an increased risk for conduct disorder that then leads to an "increased risk for serious antisocial behavior in later life" (p. 1734), and that these conduct problems are what determine adult criminality. These data are consistent with MacDonald and Achenbach's (1996) finding that children with both attention problems and conduct problems were more deviant initially, continued having externalizing problems in adolescence and young adulthood, and were at an increased risk for later antisocial behavior when compared with children with attention problems only and conduct problems only. These results held for girls as well as boys and were obtained for a nationally representative sample ($N = 983$).

Manuzza et al. (1997) followed a cohort of children with ADHD into adulthood. They found that the ADHD group, on average, had less schooling (more than 2 years less when compared with normals) as well as lower occupational status. The results were not attributed to lower intellectual ability, but were attributed to early school problems as

a result of behavioral and academic difficulties and resulting low self-esteem that face children with ADHD.

ADHD and Preschoolers

As mentioned above, inattention and overactivity are among the behaviors of concern to many preschool teachers and parents. Many researchers assert that even though ADHD is often not diagnosed until school age, symptoms of ADHD can be identified in the early childhood years, leading to the argument that more attention needs to be paid to this group than has been the case (Alessandri, 1992; Barkley, 1998; Campbell, Breaux, Ewing, & Szumowski, 1984, 1986; Campbell, Endman, & Bernfeld, 1977; Campbell et al., 1982; Cantwell & Baker, 1991; Heller et al., 1996; Lahey et al., 1998; Musten, Firestone, Pisterman, Bennett, & Mercer, 1997; Soleil, 1995). Unfortunately, there has been very little research conducted on preschool children and ADHD (Campbell, Breaux et al., 1986; Campbell et al., 1984; Campbell, Schleifer, & Weiss, 1978). Even research pertaining to the development and validity of the DSM-IV criteria has focused on older children, thus little is known even about the usefulness of the diagnostic process for this population (Lahey et al., 1998).

The few studies on ADHD actually conducted with preschool-age children suggest that the onset of ADHD symptoms can often be observed in these young children. Campbell and her colleagues, for instance, have attempted to describe some of the early signs of ADHD. These include "difficult infancy, active, inattentive and noncompliant behavior in toddlerhood, and peer problems in the preschool years" (Campbell, Breaux et

al., 1986, p. 217). During laboratory observations of free play, Campbell et al. (1982) noted that problem children were likely to be seen "flitting" from activity to activity in "rapid succession." Other indicators of subsequent ADHD are higher levels of activity and aggression, impulsivity, and mother ratings of hyperactivity during the preschool period (Campbell et al., 1978).

In sum, common behavior problems in preschoolers include problems with attention and activity level. These early difficulties may signal a later diagnosis of ADHD and perhaps "...reflect more than a transient developmental phase or negative maternal perceptions..." (Campbell et al., 1984, p. 248). Early identification of ADHD is critical to early intervention and potential prevention of associated problems (Alessandri, 1992).

Diagnostic/Assessment Issues

Campbell (1995) has called for the utilization of a developmental perspective in the assessment and diagnosis of preschool behavior disorders. Defining a problem in young children should take into account: (a) whether more than one symptom is present (e.g., a "constellation" or "pattern") or if it is just an isolated symptom, (b) whether the symptoms persist and cannot be linked to a temporary change or stressor, (c) whether symptoms are present in different contexts/environments (e.g., home and school; with parents and teachers), (d) the severity of symptoms, and (e) whether the symptoms interfere with adaptive functioning (Campbell, 1995). The purpose of using the developmental perspective is to delineate between "normal" behaviors appropriate to the child's stage of development and those that are indicative of "true symptom[s] of a

disorder” (Campbell, 1995). Furthermore, Campbell (1995) argued that the lack of such developmental guidelines makes it possible for children exhibiting normative behaviors to meet DSM criteria for behavior disorders.

The diagnostic criteria for ADHD (DSM-IV, 1994) do consider developmental level of the child by specifying that symptoms must be more severe/frequent than is typical for the child’s developmental level. Evaluation for ADHD typically takes a comprehensive approach, using information from multiple sources and methods. Assessment of ADHD may consist of parent and teacher interviews, rating scales, observation, and a physical examination (AACAP, 1997; Barkley, 1998; McKinney, Montague, & Hocutt, 1993). Parent interviews are often used to eliminate the possibility of other psychological or environmental factors and to corroborate information gained from interviews with the child/adolescent (AACAP, 1997). Teacher interviews, additionally, may be useful in clarifying the extent of the problems (Barkley, 1998).

Rating scales provide “valuable information efficiently” (AACAP, 1997). Rating scales offer many advantages, especially with preschool children (Merrell, 1998). Informants who know the children well (e.g., teachers, parents) and see the children in their natural environments are used as raters, thus increasing the likelihood problem behaviors will be noted. Another advantage is that rating scales can provide more reliable data on behavior problems when compared to other methods, such as interviewing the child. This is particularly true with preschool children who often cannot provide accurate information themselves due to developmental constraints (e.g., egocentrism). Rating scales also provide normative information for comparing children with same-age peers.

Finally, rating scales offer the advantage of being less expensive and time consuming when compared with direct observation.

Examples of rating scales that are frequently used for ADHD assessment include the Child Behavior Checklist, the Teacher's Report Form, the Barkley Home Situations Questionnaire and School Situations Questionnaire, and Conner's Parent and Teacher Rating Scales (AACAP, 1997). The Attention Deficit Disorders Evaluation Scale (ADDES) and the Conner's Abbreviated Symptom Questionnaire (ASQ) are also commonly used in ADHD assessment (Bussing et al., 1998). The Behavior Assessment System for Children (Reynolds & Kamphaus, 1992) is a relatively new comprehensive behavior rating scale that, similar to those just mentioned, is used for assessing the behavior of children (Merrell, 1998). Data seem to support its use in the assessment of ADHD as being comparable to other systems (e.g., CBCL; Doyle, Ostrander, Skare, Crosby, & August, 1997; Vaughn, Riccio, Hynd, & Hall, 1997). However, most rating scales, although helpful in the diagnostic process, are not typically derived from DSM criteria (Pelham, Gnagy, Greenslade, & Milich, 1992). Further, rating scales are multidimensional (McKinney et al., 1993) and there is little research on how well rating scales even relate to DSM criteria for diagnosis (Bussing et al., 1998). Moreover, with the exception of a few, such as the recently published ADDES preschool version, there is a lack of assessment instruments developed specifically for use with preschool children in assessing ADHD symptomatology.

Observation is an additional assessment technique used in diagnosing ADHD (AACAP, 1997). Observations within the classroom and situations where there is less

structure can provide essential information about the nature of the child's environment (AACAP, 1997). Finally, AACAP (1997) recommends that a medical examination be performed to rule out alternative problems such as deficiencies in hearing or vision and to get a complete medical history, including drug use (prescription or illicit).

Comparisons of Parent and Teacher Perceptions

Overall, parent and teacher ratings tend to be valid (Campbell, 1995). Indeed, when describing the behaviors of children with ADHD, there may be consistency between parents and teachers. For example, teacher descriptions often include disruptiveness and aggressiveness and parent descriptions include noncompliance and more frequent and intense tantrums (Barkley, 1998). In addition, when a child meets criteria for ADHD based on parent report, it is likely that teacher report will also indicate ADHD (Biederman, Faraone, Milberger, & Doyle, 1993). Furthermore, the rate of agreement between teacher and parent interviews ranges from 76% to 90% (Biederman et al., 1993). Although the Biederman et al. study is limited to the use of interviews (and on a clinically referred sample) and not to other measures (e.g., rating scales), it is encouraging that there seems to be a high degree of reliability between teachers and parents with regard to ADHD behaviors identified through the interview process.

In general, when correlations between parent and teacher ratings on rating scales are examined, there is low to moderate agreement. DuPaul (1991) reported correlations between parents and teachers on the ADHD Rating Scale-IV to be .53 for the total score, .59 for the inattention-hyperactivity subscale score, and .46 for the the impulsivity-

hyperactivity subscale score. Campbell and Ewing (1990) reported that parent and teacher ratings (CBCL and TRF) were moderately related ($r = .46$) with regard to externalizing problems among school-age children. When used in combination, parent and teacher ratings can be a powerful predictor of poor outcomes, with teacher reports being "somewhat better" than parent ratings (Verhulst, Koot, & Van der Ende, 1994).

A meta-analysis conducted by Achenbach, McConaughy, and Howell (1987) investigated the consistency across informants with regard to behavior/emotional problems. These authors looked at 119 studies involving children and adolescents. They found that when pairs of raters having same type of relation to child (e.g., parent-parent) were compared, there was a "large" degree of agreement ($r = .54 - .64$). However, when comparing raters with different relationships to the child (e.g., parent-teacher), there was a smaller degree of agreement ($r = .24 - .42$), with teacher-parent agreement at .28. These investigators recognized that problem type and age influenced the degree of informant agreement. For example, higher interrater agreement was obtained for the 6- to 11-year-old group and for undercontrolled problems. In light of the key role attributed to adult reports in diagnostic decisions, these data point to the necessity of considering these differences while conducting assessments and recognizing that different informants in different situations are likely to have somewhat different perspectives on a child's behavior. Thus, differences in agreement between raters may stem from actual differences in behaviors across settings.

Attention Deficit/Hyperactivity Disorder--
Symptoms Rating Scale

The ADHD-SRS is a recently developed rating scale intended to be used in the assessment of ADHD in school-age children (K-12; Holland, 1997). This scale was developed to assess for ADHD behaviors specifically, as most established rating scales assess more global behaviors (e.g., the CBCL). Further, many scales used in ADHD assessment were developed before the most recent revision of the DSM was published and so do not incorporate the DSM-IV (APA, 1994) criteria. Thus, the ADHD-SRS was designed to specifically assess ADHD using DSM-IV criteria. In the development of the ADHD-SRS, content validity was evaluated by experts in ADHD (Holland, 1997). Factor analyses of the ADHD-SRS provided evidence for two factors—"hyperactive-impulsive" and "inattention." According to Holland, the ADHD-SRS was found to have excellent psychometric properties. Test-retest reliability coefficients for the three scores were .95 (Inattention subscale), .96 (Hyperactive-Impulsive subscale), and .97 (Total score). Internal consistency was reported to be .98 for the parent version Total score and .99 for the teacher version Total score.

Information on convergent validity is provided by Holland (1997). Comparisons of the ADHD-SRS with the ADDES demonstrated correlations of .80 to .94 for both subscales and total scores. The ADHD-SRS was also compared with the Conner's Teacher Rating Scale (CTRS-39). The CTRS-39 Hyperactivity Index correlated highly with the ADHD-SRS Hyperactive-Impulsive Subscale and the Inattention Subscale (.96 and .94, respectively). Finally, comparisons of the ADHD-SRS with the ADHD Rating

Scale-IV, home and school versions, showed a high degree of agreement as well ($r = .84+$). Agreement between the ADHD-SRS Inattention subscale and the ADHD Rating Scale-IV Inattention Scale was at .94, while the Hyperactive-Impulsive subscale (ADHD-SRS) correlated with the ADHD Rating Scale-IV Hyperactivity-Impulsivity Scale at .93.

In sum, the ADHD-SRS has the advantage of not only being based on the most recent DSM criteria, but of "generating a more thorough and complete assessment" due to the 56 items measuring ADHD (Holland, 1997, p. 77). The ADHD-SRS, therefore, promises to be a clinically useful instrument for school-age children.

Summary

ADHD is a common problem for children, can persist into adolescence and adulthood, and has associated long-term problems. It is important that behavior problems such as ADHD be considered within a developmental context. Parents and teachers have been shown to be valid raters of ADHD, although interrater reliability is often low to moderate. Most studies on ADHD use normative data from school-age and adolescent groups. Data specifically on ADHD in preschool children and its assessment are lacking.

Purpose and Objectives of Current Study

The primary purpose of this study was to collect normative data on the ADHD-SRS using a preschool population and to investigate the psychometric properties of the ADHD-SRS, including convergent validity and internal consistency reliability.

Specifically, the objectives of this study were (a) to collect normative information on the ADHD-SRS using a sample of preschool children, (b) to gather psychometric information about the technological soundness of the ADHD-SRS with preschool children, and (c) to compare parent ratings of ADHD behaviors with teacher ratings of the same behaviors on the ADHD-SRS. In order to address these objectives, the following research questions were proposed:

1. What are normative levels of ADHD behaviors in preschool children as rated by the ADHD-SRS?
2. What is the convergent validity of the ADHD-SRS as demonstrated by correlations with the Behavior Assessment System for Children (BASC)?
3. What is the internal consistency reliability of the ADHD-SRS with a preschool sample?
4. What is the concordance of parent and teacher ratings on the ADHD-SRS?

CHAPTER III

METHOD

Participants

The participants in this study were 414 preschool children who were rated by their parents ($N = 249$) and/or teachers ($N = 315$) using behavior rating scales. Parents who had children enrolled in either a community preschool program or Head Start (ages 3-5) located in rural and suburban geographical locations (Davis County School District and the Bear River Head Start program in Cache County) were selected for this study. Descriptive data (e.g., age, ethnicity, program type) are presented in Table 1.

Instruments

The instruments used in this study were the ADHD-SRS and the BASC (parent and teacher versions). The ADHD-SRS was presented in the literature review and will be briefly addressed here.

Attention Deficit/Hyperactivity Disorder-- Symptom Rating Scale)

As discussed in the literature review, the ADHD-SRS (Holland et al., 1997) was developed to assess ADHD in children grades K-12. The scale contains 56 items measuring inattention, hyperactivity, and impulsivity (Holland, 1997). For this study, the ADHD-SRS was adapted slightly for use with preschool children. This adaptation resulted in the use of 52 of the original 56 items. The four items dropped from the

Table 1

Descriptive Data for the Subjects (N = 414)

Data	Frequency	Percent
Age		
3	41	10.0
4	292	71.2
5	77	18.8
Missing	4	
Gender		
Male	227	56.8
Female	173	43.3
Missing	14	
Ethnicity		
African American	19	4.7
Caucasian	313	76.7
Native American	15	3.7
Hispanic	50	12.3
Asian	6	1.5
Other	5	1.2
Missing	6	
Diagnostic category		
None	372	92.8
Learning disability	19	4.7
ADHD	9	.2
Developmental delay (mental retardation)	1	0.2
Missing	13	
First year in preschool		
No	94	24.1
Yes	296	75.9
Missing	24	

"Fails to complete school work or homework"). Behaviors are rated on a scale of 0 to 4, with 0 indicating "behavior does not occur" and 4 indicating "behavior occurs one to several times an hour." As reported in the literature review, psychometric properties for the ADHD-SRS with a school-age sample are excellent (Holland et al., 1998).

Behavior Assessment System for Children

The BASC is an assessment instrument that measures global behavior in children and adolescents (Reynolds & Kamphaus, 1992). Parent and teacher versions are available for the assessment of children ages 4-5. The teacher rating scale for the preschool-age group (TRS-P) contains 109 items. The parent version (PRS-P) for the same age group contains 131 items. The BASC (both the TRS-P and the PRS-P) measures behaviors within the two broad band categories of Externalizing Problems (e.g., aggression, hyperactivity) and Internalizing Problems as well as School Problems (e.g., attention problems), Other Problems (i.e., atypicality, withdrawal), Adaptive Skills, and a Behavioral Symptoms Index. Children are rated on a 4-point scale (0 to 3), ranging from "never" to "almost always." The Teacher Rating Scales for preschool children yield 14 scores and the Parent Rating Scales yield 16. T-scores and percentiles can be derived and national norms are provided for comparisons.

Sandoval (1998) reviewed the BASC and states that it has "high" content validity, "good" standardization, and "good" internal consistency, getting better as the age of the child increases. According to the BASC manual (Reynolds & Kamphaus, 1992), internal consistencies for the preschool versions of the TRS and PRS range from .70 to .90 across subscale and composite scores. Sandoval reported that the composite scores are more

consistencies for the preschool versions of the TRS and PRS range from .70 to .90 across subscale and composite scores. Sandoval reported that the composite scores are more reliable than the scale scores. Test-retest reliability ranges from the mid .80s to the mid .90s (with a one-month interval). For school age children, the BASC has been demonstrated to have convergent and criterion-related validity similar to the Child Behavior Checklist/4-18, which has been the subject of much research (Doyle et al., 1997). Correlations between the BASC and CBCL fall within the .80s and .90s (Sandoval, 1998). Also, the PRS and TRS differentiate between ADHD, LD, and mental retardation. However, Sandoval cautions that the BASC has low interrater consistency for the preschool version. Correlations between parent and teacher preschool ratings averaged (median) .24 across subscale and composite scores.

Vaughn et al. (1997) measured the ability of the BASC to discriminate between the subtypes of ADHD. The BASC was found to accurately distinguish between school-age children who meet the criteria for ADHD and those who do not meet the criteria (a slight advantage over the CBCL; Vaughn et al., 1997). Vaughn et al. (1997) also found that the BASC was better able to distinguish those classified as ADHD: predominantly inattentive than was the CBCL.

Procedure

Data were collected at two sites in northeastern Utah: Davis School District and Bear River Head Start. In Davis School District, a letter from the researchers along with a letter of support from the early childhood director was submitted to the district's

research department requesting permission to conduct the study (see Appendix A) in the district's preschool program. For the Bear River Head Start program, permission was obtained from the program's policy council, made up of program staff and parents.

Once permission to conduct the study was obtained, the researchers met with teachers to explain the research procedures and distribute research packets. In total, 390 teacher packets were distributed. Research packets were distributed to teachers in Davis School District during a monthly inservice (that all early childhood staff are required to attend) with a brief explanation of the study and procedure for completing the packets. Packets for the Bear River Head Start teachers were delivered to their individual classrooms. All teachers, regardless of participation, received a "thank-you" note with a candy bar attached. Teacher packets included a consent/instruction letter, child/parent demographic sheet, rating scales, a student recording form (to indicate which students had been rated to allow for follow-up in the spring as part of a separate dissertation project), and a confidential envelope to seal the student recording form. Teachers and assistants for each classroom were asked to complete a rating scale for five children each (either the first five or last five on their class list). Each teacher packet included two BASCs along with five ADHD-SRSs so that each teacher/assistant rated two children with both the BASC and the ADHD-SRS and three children with only the ADHD-SRS. The teachers were requested to not include names of children, parents, or teachers, or other identifying information on the rating scales themselves, as identification numbers were assigned instead. The teachers were also asked to send a packet home with each child in their classroom. For children rated by teachers and assistants, teachers sent home parent

packets with matching identification numbers so that parent and teacher responses could be matched. Davis teachers who completed and returned packets were entered into a drawing to receive two separate prizes of one free pizza. The Bear River teachers were entered in a drawing for the opportunity to win storybooks for their classroom. Teachers completed and returned rating scales on 315 students (81% return rate).

All parent packets included a consent/instruction letter, demographic sheet, and ADHD-SRS. In total, 544 parent packets were sent out. Of these, 272 parents (220 Cache parents and 68 Davis parents) were randomly assigned to receive a BASC (PRS-P) as well. Each parent received a fast food coupon that was redeemable for a small food item (e.g., fries, ice cream cone) with their packet. A postage-paid envelope was provided so that the rating scales could be mailed directly to the researchers. Parents who chose to participate and completed/returned the rating scales were entered into a drawing to receive a gift certificate or two separate prizes of free pizza and video rentals. Parents who returned the rating scales before the deadline were entered into the drawing a second time, increasing their chances of winning. In total, 249 parents returned packets (46% overall return rate). In addition to the 249 ADHD-SRSs obtained from parents, 160 BASCs were returned.

CHAPTER IV

RESULTS

Data Analysis

A coding system was developed to allow for systematic coding and analyses of the information gathered from each protocol. The coding system was contrived to include each participant's demographic information and the item responses given by the parent and teacher raters. The system consisted of a coding dictionary and instructions to the coder, which permitted standardization of the coding procedure. The coding dictionary included: (a) the names of the different variables, (b) a description of each variable, and (c) the number of columns in the data set each variable would span. This format facilitated data entry into the computer statistical packages, SAS and SPSS. Two different versions of the coding dictionary were constructed: one for parent ratings, and one for teacher ratings. Protocols missing more than five item responses were not coded. The help of undergraduate students was enlisted for entering the data, for which they received university credits.

Descriptive Statistics

As mentioned previously, 414 Head Start and Community Preschool children were rated by their teachers and/or parents. The parent rating scales were complete mostly by the children's mothers (94.4%). Alternative raters included fathers (2.4%), stepmothers (1.2%), foster parents (0.4%), and other (1.6%).

The first research question of this study involved examining the normative levels of ADHD behaviors in preschool children as rated by parents and teachers on the ADHD-SRS. To analyze the data, means and standard deviations were computed for the ADHD-SRS. These results are shown in Table 2. As shown in the table, parents rated children as having a slightly higher frequency of behavior problems compared to teachers, although this difference is not statistically significant, $F(314, 248) = 1.25, p < 0.0704$.

An examination of individual item responses by teachers and parents was also conducted in order to shed some light on normative levels of ADHD behaviors among preschool children. Teachers and parents rated the children similarly on some items. For instance, almost a quarter of children as rated by both teachers (22.8%) and parents (22.6%) were said to have a frequent problem (behavior occurring daily or more often) on item #1 ("has a short attention span"). Item #14 ("does not hear all of what has been said") was also rated as occurring frequently for many children by teachers (17.9%) and parents (20.5%). Finally, parents rated 21.3% of the children as having frequent difficulties with item #8 ("makes excessive noise").

Table 2

Descriptive Statistics for Parent and Teacher Ratings on the ADHD-SRS

Rater	<u>n</u>	Mean	<u>SD</u>
Parent	249	61.04	39.57
Teacher	315	44.59	44.15

Some items rated as less of a problem are worth mentioning as well. For example, only 7% of teacher ratings and 4.4% of parent ratings showed children displaying item #16 ("rocks in seat") to a frequent degree. For item # 3 ("loses things that he/she needs"), 3.8% of the children were rated as exhibiting this behavior frequently by their teachers and 9.3% by their parents. On item #8 ("makes excessive noise"), teachers rated only 9.2% as engaging in the behavior frequently. The graphs in Appendix B provide a complete breakdown of item-level responses.

To investigate whether there were differences in behaviors between the Head Start and community preschool children, means and standard deviations for teacher ratings were calculated separately for these groups. As can be seen in Table 3, Head Start children obtained a higher mean than the community preschool children, which was statistically significant, $F(243, 70) = 1.80, p = 0.0044$.

Table 3

Descriptive Statistics for Head Start Children and Community Preschool Children--
Teacher Ratings

Program	<u>n</u>	Mean	<u>SD</u>
Head Start	244	47.48	46.24
Community preschool	71	34.63	34.50

The comparisons for Head Start children and community preschool children as rated by their parents are presented in Table 4. No statistically significant differences were detected with respect to this comparison.

Convergent Validity

The second research question involves the degree of convergent and discriminant validity between the ADHD-SRS and the BASC. Pearson product-moment correlations between the ADHD-SRS total score and the BASC subscales (Adaptability, Aggression, Anxiety, etc.) were computed. The correlations between the ADHD-SRS and BASC are presented in Table 5. The weakest correlation was between the Adaptability subscale and ADHD-SRS total ($r = .08$ for teachers and $r = .03$ for parents). The strongest correlation was between the Hyperactivity subscale and ADHD-SRS total score ($r = .87$ for teachers and $.82$ for parents).

Table 4

Descriptive Statistics for Head Start Children and Community Preschool

Children--Parent Ratings

Program	<u>n</u>	Mean	<u>SD</u>
Head Start	181	61.46	40.19
Community preschool	68	59.91	38.13

Table 5

Correlations Between the ADHD-SRS Total Score and the BASC Subscales (n = 73)

Scale	Correlations with the ADHD-SRS	
	Teachers	Parents
Adaptability	.08	-.03
Aggression	.74	.66
Anxiety	.47	.42
Attention problems	.69	.70
Atypicality	.71	.56
Depression	.49	.61
Hyperactivity	.87	.82
Social skills	-.35	-.25
Somatization	.25	.37
Withdrawal	.33	.13

Internal Consistency Reliability

Cronbach's coefficient alpha was computed to measure the internal consistency of the ADHD-SRS with a preschool sample, which addresses the third research question. Alpha coefficients were computed using the 249 parent ratings and 315 teacher ratings. This analysis resulted in a coefficient alpha of .99 for the teacher data and a coefficient alpha of .98 for the parent data for the ADHD-SRS total score.

Concordance Between Parent and Teacher Ratings

The final research question addresses the degree to which parent and teacher ratings are consistent. Pearson product-moment correlations between parent and teacher ratings were computed to measure the degree of interrater agreement, with respect to the total

score on the ADHD-SRS. The correlation coefficient for total score agreement between parents and teachers was .31.

As mentioned at the beginning of this section and reported in Appendix B, item frequencies for parents and teachers were also examined. For all items, teachers rated most children, using the mode, as not exhibiting the behavior/having no knowledge of the behavior, with less frequent ratings at the more severe end. Likewise, parents rated the majority of children, for the most part, at the low end of the continuum. However, parent ratings tended to be more evenly distributed among the first four descriptors, in contrast to teacher ratings.

CHAPTER V

DISCUSSION

The main focus of this study was to gather normative information for a sample of preschool children using the ADHD-SRS. Another aim was to examine the technological soundness of the ADHD-SRS for preschool children. The purpose of this chapter is to discuss these objectives in light of the findings and to delineate the study limitations and possible directions for future research.

Normative Levels of ADHD Behaviors in

This Sample of Preschool Children

Researchers (e.g., Campbell, Breaux et al., 1986) argue that ADHD can be identified as early as preschool. It is therefore important to recognize what should be considered "typical" behavior of preschool children when attempting to determine what behavior should be considered problematic. The present study found that the need to have questions and directions repeated seems to be quite typical for preschool children. It also appears, according to these data, that having a short attention span is typical for preschool children. The ratings for these two items were relatively stable across problem degree (percentages evenly distributed among the rating options) for both teacher and parent ratings. The notion that these behaviors are "normal" for preschoolers makes sense when considered within a developmental context (e.g., cognitive-level constraints on memory, concrete thinking).

Also, both fidgeting/squirming and running in the halls/house could be considered typical preschool behavior. Behavior ratings for both teachers and parents were spread out over the continuum for both of these behaviors, with less than half saying the behavior did not occur at all. This may not be surprising in light of the idea that one developmental task for preschool children is to gain self-control.

Yet another relatively common behavior found in the present sample, shifting from activity to activity, was rated by teachers and parents as frequently occurring in about one fifth of the children. Also, close to one third of the children rated by parents were viewed as being "on the go" at a frequent rate (only about one tenth were rated as such by their teachers).

In sum, it was found in this study that ADHD behaviors are evident in preschool children. Such behaviors include short attention span, fidgeting/squirming, shifting from activity to activity, and being on the go. Because the present study focused on determining normative levels of ADHD behaviors in preschool children and not on diagnosis per se, it is uncertain as to what percentage of these children would actually meet the diagnostic criteria for ADHD. Certainly more research is needed to determine the diagnostic utility of the ADHD-SRS for preschool children.

Given the preceding caveat, the frequencies of ADHD behaviors found in the present study are somewhat consistent with those found within the existing literature. For example, Anderson (1983) found that 14.7% of low-income preschool children were rated by their teachers as being hyperactive/distractable. Additionally, Keenan et al. (1997) found that 10.3% of the preschoolers in their sample met the criteria for a

“subthreshold” diagnosis of ADHD. The frequency of behavior problems in general (both internalizing and externalizing) rose to 21.9% (Keenan et al., 1997). Possible reasons for the lack of total agreement between the numbers of the present study and these two studies include sample differences, measurement differences, and perhaps differences in definitions of terms. For instance, participants in this study were mostly White Head Start and community preschool children, whereas Anderson’s sample consisted mostly of Black Head Start children. Given these differences, however, it is important to note the consistent finding of behavior problems within the preschool population. Pavuluri et al. (1996) suggest that one in five preschool children exhibit behavior problems.

Important differences are evident between the teacher ratings and parent ratings that have implications for determining what is typical and what is not. For example, “always on the go” was rated as occurring more frequently by parents than by teachers (32.5% vs. 12.8%). One possible explanation for this discrepancy is the degree of structure at home versus at school. School settings tend to be more structured in that activities are more likely to be planned and organized, a set schedule is imposed and adhered to, and so on. At home, children may seem to be on the go more frequently simply because of less rigid expectations to be doing certain structured activities at predetermined times.

Another notable difference has to do with climbing on things. Teachers rated 11.8% of the children as engaging in this behavior at a frequent rate, whereas 32% of the children were rated as such by their parents. As mentioned above, the difference between the school setting and the home setting is a probable explanation for this discrepancy.

There would most likely be less opportunity/expectation for climbing on inappropriate things at the school setting. By the same token, the opportunity for climbing on appropriate objects (e.g., a "Big Toy") may be greater at school than at home.

Given the assumption that both teachers and parents are valid sources of information, with regard to problem behavior, differences between teacher and parent ratings support the importance of gathering information from multiple sources when making classification decisions. Verhulst et al. (1994) suggested that ratings from parents and teachers, in combination, provide a robust prediction of later problems. The results from the present study underscore the importance of the multi-informant method of assessing the preschool child.

Convergent and Discriminant Validity

Convergent validity is described as being the degree to which different instruments (e.g., rating scales), methods, informants, and so on come together in measuring some construct (Pedhazur & Schmelkin, 1991). A high degree of convergence indicates instruments are measuring similar constructs (e.g., ADHD). When gathering validity evidence for a rating scale, it is standard practice to correlate it with a more established scale. Conversely, discriminant validity is used to determine the degree to which the two scales are measuring different constructs, or diverge from one another. When used in combination, convergence and divergence can provide strong support for the validity of an instrument.

The present study looked at the relationship between the ADHD-SRS (preschool version) and subscales of the BASC). To be considered a valid measure of ADHD, the ADHD-SRS should have a strong relationship with those BASC subscales that measure ADHD behaviors or behaviors related to ADHD. Alternatively, those subscales not associated with ADHD should not be related to the ADHD-SRS. Correlations between BASC subscales associated with ADHD (i.e., Aggression, Attention Problems, and Hyperactivity) and the ADHD-SRS total score ranged from .66 to .87. This is suggestive of a moderately strong relationship between the constructs being measured by the BASC and the ADHD-SRS. It is important to point out that the BASC Anxiety subscale was found to be moderately related to the ADHD-SRS total score (correlations of .47 and .42 for teachers and parents, respectively). Also, the Depression subscale had a high correlation with the ADHD-SRS total score (.49 and .61, for teachers and parents, respectively). It is not surprising that the Aggression, Anxiety, and Depression subscales would have a high degree of association with the ADHD-SRS, along with the Attention Problems and Hyperactivity subscales themselves (with the Hyperactivity subscale having the strongest magnitude). As discussed in the literature review section, these problems often coexist with ADHD. It could be that the children are manifesting these behaviors in conjunction with ADHD behaviors and teachers and parents are seeing the behaviors as occurring together.

With regard to discriminant validity, BASC subscales not expected to be associated with ADHD (e.g., Adaptability, Social Skills) had low correlations with the ADHD-SRS total score. For instance, the correlation between the Adaptability subscale and the

ADHD-SRS total score was .08 for the teacher ratings and -.03 for parents. In addition, the Social Skills subscale had an inverse relationship with the ADHD-SRS total score ($r = -.35$ for teachers and $-.25$ for parents). These findings are consistent with research that suggests children with ADHD also have difficulties in terms of social skills, peer relationships, and functioning in general.

Holland (1997) compared the ADHD-SRS (K-12) with both the Conners' Teacher Rating Scale (CTRS-39) and the AD/HD Rating Scale-IV. Consistent with the current findings, correlations between these scales and the ADHD-SRS were moderate to strong.

In sum, the data on convergence and divergence provide additional support for the validity of the ADHD-SRS. These findings also offer strong validity evidence in a preschool sample.

Internal Consistency Reliability

Internal consistency reliability is the degree to which the items on a given instrument are correlated with its total score. High internal consistency suggests homogeneity among the items, or that they are measuring the same construct (e.g., ADHD; Pedhazur & Schmelkin, 1991). Coefficient alpha is one method employed for determining a rating scale's internal consistency. Obtained alphas for this study were .98 for the parent ratings and .99 for the teacher ratings, indicating extremely high internal consistency for the preschool version of the ADHD-SRS. Likewise, Holland (1997) obtained coefficient alphas of .98 and .99 for parent and teacher ratings, respectively, on the K-12 version of the ADHD-SRS. Taken together, these findings indicate that the items on the ADHD-SRS are measuring the same construct.

Concordance Between Parent and Teacher Ratings

The present study examined the degree of agreement between parent and teacher ratings and found a moderate correlation between the two. This is supportive of the notion that different raters in different settings perceive differences in the individual child's behavior. This most likely reflects differences in the raters and/or the setting and underscores the importance of gathering information from a variety of sources familiar with the child in different contexts when making decisions about the child (e.g., diagnosis of ADHD). For a discussion of these differences with regard to typical preschool behavior, please refer to the section discussing individual item similarities/differences and normative levels of ADHD.

The current finding of low teacher-parent agreement is consistent with past research. For example, the Achenbach et al. (1987) meta-analysis on interrater agreement found that teacher and parent concordance was moderately low ($r = .28$).

Limitations

Limitations to this study must be considered. First, the sample utilized in this study was obtained exclusively from the northern Utah area and may not be representative of the general U.S. population. Although the race/ethnicity of this sample more closely reflect national percentages than expected, it would have been preferable to have used a sample consisting of participants representing several geographic regions of the US.

Second, a large part of the sample consisted of children enrolled in Head Start programs. For teacher ratings, there were significant differences between the Head Start and community preschool samples suggesting that this over-weighting of Head Start children may limit the generalizability of results (particularly with a teacher sample) to children from lower socioeconomic status backgrounds. Research involving more preschoolers from diverse backgrounds is needed to determine general levels of ADHD behaviors for the preschool group as a whole.

Third, it might be possible that characteristics of the parents themselves (e.g., stress, adult ADHD) would affect how they rate their children. This is an area that was not examined in the present study. Future research should look at how parental characteristics might influence the way they perceive behaviors in their children.

Directions for Future Research

The results of this research add information about the usefulness of the ADHD-SRS, expanding the age range to include preschool children. It also provides support for the psychometric soundness of the instrument. As Holland aptly recommended (1997), however, more research is needed to develop national norms and to determine the clinical utility of the ADHD-SRS as a diagnostic tool. For instance, obtaining samples of preschool children from across various geographic regions, ethnic groups, and economic statuses would be beneficial in providing normative information for the ADHD-SRS. Also, developing cut-off scores would move the ADHD-SRS toward being useful for ADHD diagnosis during the preschool period.

The implementation of longitudinal designs would also enhance this research. It would be informative, for example, to follow these children into grade school and look at which ones eventually receive a diagnosis/classification of ADHD. This would be important in evaluating the ability of the ADHD-SRS to predict later problems with ADHD. In addition to evaluating specificity of the ADHD-SRS, longitudinal research would also allow for evaluating the how sensitive the ADHD-SRS is to changes in ADHD (e.g., treatment changes, developmental changes).

Finally, all good research needs to be replicated to confirm or disconfirm the findings and add to the existing knowledge base. Because construct validity is an ongoing process, it would be important to gather additional support for the ADHD-SRS in this regard. Gathering additional evidence could be done, for example, by investigating the correlation of this instrument with other methods used in assessing preschool children (e.g., observations, parent/teacher interviews). Factor analytic techniques would also provide additional evidence for the validity of the ADHD-SRS. In addition, factor analysis could help determine whether ADHD is one construct at the preschool level or involves more than one, as in the school age group.

Summary

In sum, this study provided information about the usefulness of the ADHD-SRS using a sample of preschool children. The psychometric properties of the ADHD-SRS are strongly supported by the findings of this study. Additional research that focuses on the development of norms and clinical utility should be conducted before diagnostic use

of the scale. A scale such as this is badly needed to help identify children who may have ADHD earlier to better help them as they enter the formal school system.

REFERENCES

- Achenbach, T.M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. Psychological Bulletin, 101, 213-232.
- Alessandri, S. M. (1992). Attention, play, and social behavior in ADHD preschoolers. Journal of Abnormal Child Psychology, 20, 289-302.
- American Academy of Child and Adolescent Psychiatry. (1997). AACAP official action: Summary of the practice parameters for the assessment and treatment of children, adolescents, and adults with ADHD. Journal of the American Academy of Child and Adolescent Psychiatry, 36, 1311-1317.
- American Psychiatric Association. (1980). Diagnostic and statistical manual of mental disorders (3rd ed.). Washington, DC: Author.
- American Psychiatric Association. (1987). Diagnostic and statistical manual of mental disorders (3rd ed., revised). Washington, DC: Author.
- American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.
- Anderson, D. R. (1983). Prevalence of behavioral and emotional disturbance and specific problem types in a sample of disadvantaged preschool-aged children. Journal of Clinical Child Psychology, 12, 130-136.

- Barkley, R. A. (1988). The effects of methylphenidate on the interactions of preschool ADHD children with their mothers. Journal of the American Academy of Child and Adolescent Psychiatry, 27, 336-341.
- Barkley, R. A. (1990). Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment. New York: Guilford Press.
- Barkley, R. A. (1998). Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment (2nd ed.). New York: Guilford Press.
- Benasich, A. A., Curtiss, S., & Tallal, P. (1993). Language, learning and behavioral disturbances in childhood: A longitudinal perspective. Journal of the American Academy of Child and Adolescent Psychiatry, 32, 585-594.
- Biederman, J., Faraone, S. V., Milberger, S., & Doyle, A. (1993). Diagnosis of Attention-deficit Hyperactivity Disorder from parent reports predict diagnoses based on teacher reports. Journal of the American Academy of Child and Adolescent Psychiatry, 32, 315-317.
- Biederman, J., Faraone, S. V., Taylor, A., Sienna, M., Williamson, S., & Fine, C. (1998). Diagnostic continuity between child and adolescent ADHD: Findings from a longitudinal clinical sample. Journal of the American Academy of Child and Adolescent Psychiatry, 37, 305-313.
- Bullock, W., Yurko, K., Solis, N., & Hogan, K. (1995, August). Intellectual achievement, and mental health evaluation of at-risk adolescents: Assessing comorbidity of ADHD, LD, and conduct problems. Paper presented at the 103rd Annual Meeting of the American Psychological Association, New York.

Bussing, R., Schuhmann, E., Belin, T. R., Widawski, M., & Perwien, A. R. (1998).

Diagnostic utility of two commonly used ADHD screening measures among special education students. Journal of the American Academy of Child and Adolescent Psychiatry, 37, 74-82.

Campbell, S. B. (1987). Parent-referred problem three-year-olds: Developmental changes in symptoms. Journal of Child Psychology and Psychiatry and Allied Disciplines, 28, 835-845.

Campbell, S. B. (1994). Hard-to-manage preschool boys: Externalizing behavior, social competence, and family context at two-year followup. Journal of Abnormal Child Psychology, 22, 147-166.

Campbell, S. B. (1995). Behavior problems in preschool children: A review of recent research. Journal of Child Psychology and Psychiatry and allied Disciplines, 36, 113-149.

Campbell, S. B. (1998). Developmental perspectives. In T. H. Ollendick & M. Hersen (Eds.), Handbook of child psychopathology (3rd ed., pp. 3-35). New York: Plenum Press.

Campbell, S. B., Breaux, A. M., Ewing, L. J., & Szumowski, E. K. (1984). A one-year follow-up study of parent-referred hyperactive preschool children. Journal of the American Academy of Child Psychiatry, 23, 243-249.

- Campbell, S. B., Breaux, A. M., Ewing, L. J., & Szumowski, E. K. (1986). Correlates and predictors of hyperactivity and aggression: A longitudinal study of parent-referred problem preschoolers. Journal of Abnormal Child Psychology, 14, 217-234.
- Campbell, S. B., Endman, M. W., & Bernfeld, G. (1977). A three-year follow-up of hyperactive preschoolers into elementary school. Journal of Child Psychology and Psychiatry and Allied Disciplines, 18, 239-249.
- Campbell, S. B., & Ewing, L. J. (1990). Follow-up of hard-to-manage preschoolers: Adjustment at age 9 and predictors of continuing symptoms. Journal of Child Psychology and Psychiatry and Allied Disciplines, 31, 871-889.
- Campbell, S. B., Ewing, L. J., Breaux, A. M., & Szumowski, E. K. (1986). Parent-referred problems three-year-olds: Follow-up at school entry. Journal of Child Psychology and Psychiatry and Allied Disciplines, 27, 473-488.
- Campbell, S. B., & Paulauskas, S. (1979). Peer relations in hyperactive children. Journal of Child Psychology and Psychiatry and Allied Disciplines, 20, 233-246.
- Campbell, S. B., Pierce, E. W., March, C. L., Ewing, L. J., & Szumowski, E. K. (1994). Hard-to-manage preschool boys: Symptomatic behavior across contexts and time. Child Development, 65, 836-851.
- Campbell, S. B., Schleifer, M., & Weiss, G. (1978). Continuities in maternal reports and child behaviors over time in hyperactive and comparison groups. Journal of Abnormal Child Psychology, 6, 33-45.

- Campbell, S. B., Szumowski, E. K., Ewing, L. J., Gluck, D. S., & Breaux, A. M. (1982). A multidimensional assessment of parent-identified behavior problem toddlers. Journal of Abnormal Child Psychology, 10, 569-591.
- Cantwell, D. P., & Baker, L. (1991). Association between attention-deficit hyperactivity disorder and learning disorders. Journal of Learning Disabilities, 24, 88-95.
- Doyle, A., Ostrander, R., Skare, S., Crosby, R. D., & August, G. J. (1997). Convergent and criterion-related validity of the behavior assessment system for children-parent rating scale. Journal of Clinical Child Psychology, 26, 276-284.
- DuPaul, G. J. (1991). Parent and teacher ratings of ADHD symptoms: Psychometric properties in a community-based sample. Journal of Clinical Child Psychology, 20, 245-253.
- DuPaul, G. J., & Barkley, R. A. (1998). Attention-deficit hyperactivity disorder. In R. Morris & T. Kratochwill (Eds.), The practice of child therapy (pp. 132-166). Boston: Allyn & Bacon.
- Egeland, B., Kalkoske, M., Gottesman, N., & Erickson, M. F. (1990). Preschool behavior problems: Stability and factors accounting for change. Journal of Child Psychology and Psychiatry and Allied Disciplines, 31, 891-909.
- Fischer, M., Barkley, R. A., Fletcher, K. E., & Smallfish, L. (1993). The stability of dimensions of behavior in ADHD and normal children over an 8-year followup. Journal of Abnormal Child Psychology, 21, 315-337.

- Greenberg, M. T., DeKlyen, M., Speltz, M. L., & Endriga, M. C. (1997). The role of attachment processes in externalizing psychopathology in young children. In L. Atkinson & K. J. Zucker (Eds.), Attachment and psychopathology (pp. 196-222). New York: Guilford Press.
- Greene, R. W., Biederman, J., Faraone, S. V., Sienna, M., & Garcia-Jetton, J. (1997). Adolescent outcome of boys with attention-deficit/hyperactivity disorder and social disability: Results from a 4-year longitudinal follow-up study. Journal of Consulting and Clinical Psychology, 65, 758-767.
- Heller, T. L., Baker, B. L., Henker, B., & Hinshaw, S. P. (1996). Externalizing behavior and cognitive functioning from preschool to first grade: Stability and predictors. Journal of Clinical Child Psychology, 25, 376-387.
- Holland, M. L. (1997). An investigation of the psychometric properties and factor structure of the attention-deficit/hyperactivity disorder symptoms rating scale for children and adolescents. Unpublished dissertation, Utah State University, Logan.
- Holland, M. L., Gimpel, G. A., & Merrell, K. W. (1997). The attention-deficit/hyperactivity disorder symptoms rating scale for children and adolescents. Unpublished rating scale, Utah State University, Logan.
- Holland, M. L., Gimpel, G. A., & Merrell, K. W. (1998). Innovations in assessing ADHD: Development, psychometric properties and factor structure of the ADHD symptoms rating scale (ADHD-SRS). Journal of Psychopathology and Behavioral Assessment, 20, 307-332.

- Keenan, K., Shaw, D. S., Walsh, B., Delliquadri, E., & Giovannelli, J. (1997). DSM-III-R disorders in preschool children from low-income families. Journal of the American Academy of Child and Adolescent Psychiatry, 36, 620-627.
- Lahey, B. B., Pelham, W. E., Stein, M. A., Loney, J., Trapani, C., Nugent, K., Kipp, H., Schmidt, E., Lee, S., Cale, M., Gold, E., Hartung, C. M., Willcutt, E., & Baumann, B. (1998). Validity of DSM-IV attention-deficit/hyperactivity disorder for younger children. Journal of the American Academy of Child and Adolescent Psychiatry, 37, 695-702.
- Lyons-Ruth, K., Easterbrooks, M. A., & Cibelli, C. D. (1997). Infant attachment strategies, infant mental lag, and maternal depressive symptoms: Predictors of internalizing and externalizing problems at age 7. Developmental Psychology, 33, 681-692.
- MacDonald, V. M., & Achenbach, T. M. (1996). Attention problems versus conduct problems as six-year predictors of problem scores in a national sample. Journal of the American Academy of Child and Adolescent Psychiatry, 35, 1237-1246.
- Mannuzza, S., Klein, R. G., Bessler, A., Malloy, P., & Hynes, M. E. (1997). Educational and occupational outcome of hyperactive boys grown up. Journal of the American Academy of Child and Adolescent Psychiatry, 36, 1222-1227.
- Mannuzza, S., Klein, R. G., Bessler, A., Malloy, P., & LaPadula, M. (1998). Adult psychiatric status of hyperactive boys grown up. American Journal of Psychiatry, 155, 493-498.

- McKinney, J. D., Montague, M., & Hocutt, A. M. (1993). Educational assessment of students with attention deficit disorder. Exceptional Children, 60, 125-131.
- Merrell, K. W. (1998). Behavioral, social, and emotional assessment of children and adolescents. Mahwah, NJ: Erlbaum.
- Mulhern, S., Dworkin, P. H., & Bernstein, B. (1994). Do parental concerns predict a diagnosis of attention-deficit hyperactivity disorder? Journal of Developmental and Behavioral Pediatrics, 15, 348-352.
- Musten, L. M., Firestone, P., Pisterman, S., Bennett, S., & Mercer, J. (1997). Effects of methylphenidate on preschool children with ADHD: Cognitive and behavioral functions. Journal of the American Academy of Child and Adolescent Psychiatry, 36, 1407-1415.
- Palomares, R. S., Thompson, B., & Reynolds, C. R. (1991, March). Characteristics of learning disabled, emotionally disturbed, ADHD/ADD, and nonexceptional children: A behavioral assessment measurement approach. Paper presented at the Annual Meeting of the National Association of School Psychologists, Dallas, TX.
- Paulauskas, S. L., & Campbell, S. B. (1979). Social perspective-taking and teacher ratings of peer interaction in hyperactive boys. Journal of Abnormal Child Psychology, 7, 483-493.
- Pavuluri, M. N., Luk, S. L., & McGee, R. (1996). Help-seeking for behavior problems by parents of preschool children: A community study. Journal of the American Academy of Child and Adolescent Psychiatry, 35, 215-222.

- Pedhazur, E. J., & Schmelkin, L. P. (1991). Measurement, design, and analysis: An integrated approach. Hillsdale, NJ: Erlbaum.
- Pelham, W. E., Gnagy, E. M., Greenslade, K. E., & Milich, R. (1992). Teacher ratings of DSM-III-R symptoms for the disruptive behavior disorders. Journal of the American Academy of Child and Adolescent Psychiatry, 31, 210-218.
- Pisecco, S., Baker, D. B., Silva, P. A., & Brooke, M. (1996). Behavioral distinctions in children with reading disabilities and/or ADHD. Journal of the American Academy of Child and Adolescent Psychiatry, 35, 1477-1484.
- Reynolds, C. R., & Kamphaus, R. W. (1992). Behavior assessment system for children manual. Circle Pines, MN: American Guidance Service.
- Sabatino, D. A., & Vance, H. B. (1994). Is the diagnosis of attention deficit/hyperactivity disorders menaingful? Psychology in the Schools, 31, 188-196.
- Sandoval, J. (1998). Review of the behavior assessment system for children. In J. C. Impara, B. S. Plake, & L. L. Murphy (Eds.), The thirteenth mental measurements yearbook (pp. 128-131). Lincoln: The Buros Institute of Mental Measurements/The University of Nebraska-Lincoln.
- Satterfield, J. H., & Schell, A. (1997). A prospective study of hyperactive boys with conduct problems and normal boys: Adolescent and adult criminality. Journal of the American Academy of Child and Adolescent Psychiatry, 36, 1726-1735.
- Soleil, G. (1995). Understanding and identifying children with ADHD: First steps to effective intervention (Policy Briefs). Boone, NC: Appalachia Educational Laboratory State Policy Program.

- Szumowski, E. K., Ewing, L. J., & Campbell, S. B. (1986). What happens to "hyperactive" preschoolers? Journal of Children in Contemporary Society, 19, 75-88.
- Taylor, E., Chadwick, O., Heptinstall, E., & Danckaerts, M. (1996). Hyperactivity and conduct problems as risk factors for adolescent development. Journal of the American Academy of Child and Adolescent Psychiatry, 35, 1213-1226.
- Teicher, M. H., Ito, Y., Glod, C. A., & Barber, N. I. (1996). Objective measurement of hyperactivity and attentional problems in ADHD. Journal of the American Academy of Child and Adolescent Psychiatry, 35, 334-342.
- Vaughn, M.L., Riccio, C. A., Hynd, G. W., & Hall, J. (1997). Diagnosing ADHD (predominantly inattentive and combined type subtypes): Discriminant validity of behavior assessment system for children and the Achenbach parent and teacher rating scales. Journal of Clinical Child Psychology, 26, 349-357.
- Verhulst, F. C., Koot, H. M., & Van der Ende, J. (1994). Differential predictive value of parents' and teachers' reports of children's problem behaviors: A longitudinal study. Journal of Abnormal Child Psychology, 22, 531-546.
- Wicks-Nelson, R., & Israel, A. C. (1991). Behavior disorders of childhood (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

Department of Psychology
Utah State University
RMC 28
Logan, Utah 84302

APPENDICES

Appendix A. Permission Letter



DEPARTMENT OF PSYCHOLOGY
Logan, Utah 84322-2810
Telephone: (801) 797-1460
FAX: (801) 797-1448

July 9, 1998

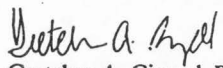
To Whom It May Concern:

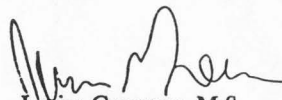
This letter is being submitted to request permission to collect data from the Davis County School District Community Preschool and Head Start classrooms. The data are to be used as part of two Utah State University graduate students' research projects (thesis and dissertation). The nature of the research is to collect normative information regarding Attention Deficit/Hyperactivity behaviors in preschool children. Not much is known about what is typical and normal within this particular population. This data collection will involve parents and teachers completing standardized ADHD checklists about the children in their care. Data collection should begin in the fall (approximately October 1998). Follow-up data may be collected at a later point in the school year (e.g., March 1999). Most of the data to be collected within Davis County School District (DCSD) will be gathered primarily by Penny L. Phillips. Penny is employed by DCSD and is currently working as a Head Start Family Service Worker. This project will be completed on personal time, not district time.

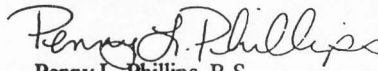
Gathering this type of information is important in further understanding the typical preschool child's behavior and helping identify children with problem behaviors related to ADHD. Such identification will allow for early and appropriate treatment. Utah State University students and faculty are willing to provide free inservice training to preschool/Head Start teachers/staff if desired. Any questions about this project can be directed to the students, Penny L. Phillips, B.S. or Jessica Greenson, M.S., or to their supervisor, Gretchen A. Gimpel, Ph.D., at the address/phone as indicated above. Dr. Gimpel can also be reached at (435) 797-0721.

Consideration of this request is very much appreciated.

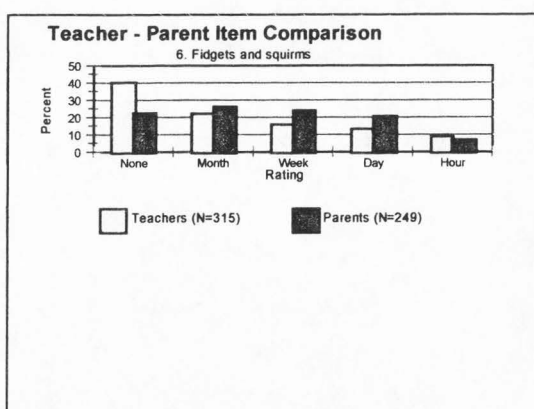
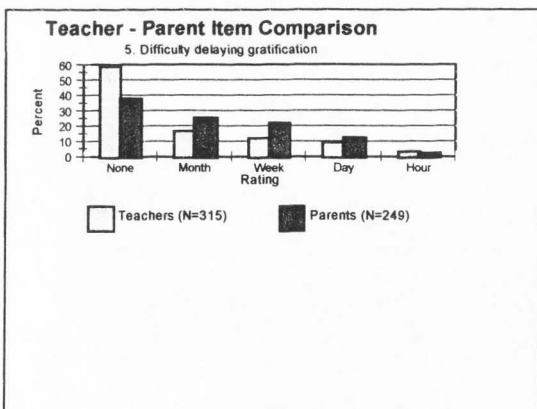
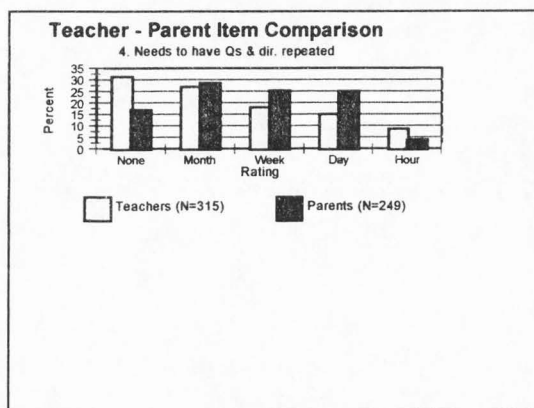
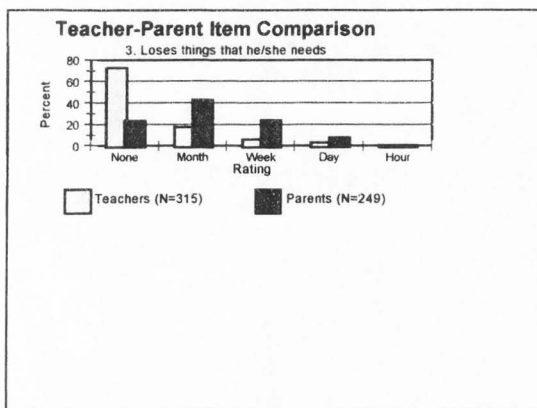
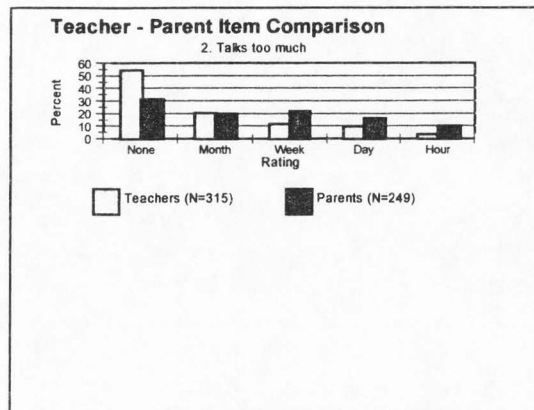
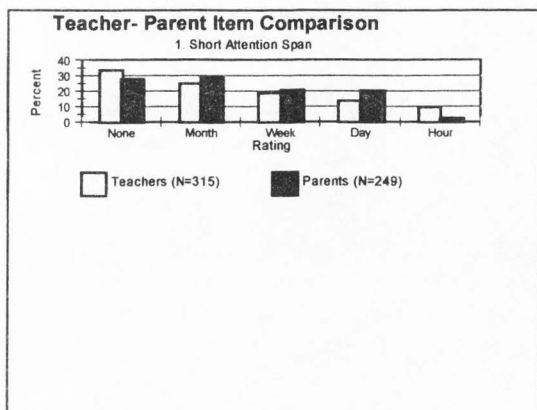
Respectfully,


Gretchen A. Gimpel, Ph.D.
Assistant Professor


Jessica Greenson, M.S.
Graduate Student

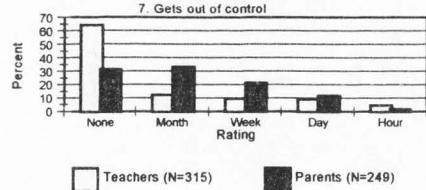

Penny L. Phillips, B.S.
Graduate Student

Appendix B: Teacher-Parent Item Comparison Graphs

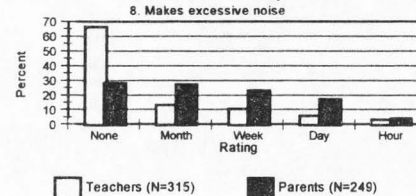


Teacher - Parent Item Comparison

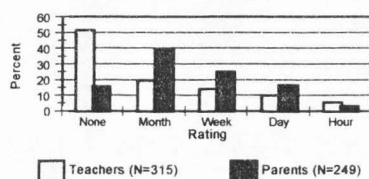
7. Gets out of control

**Teacher - Parent Item Comparison**

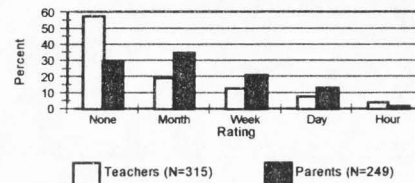
8. Makes excessive noise

**Teacher - Parent Item Comparison**

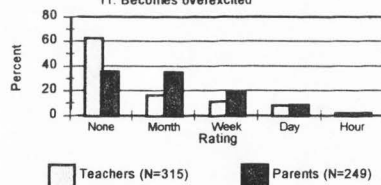
9. Bothers others- work/play

**Teacher - Parent Item Comparison**

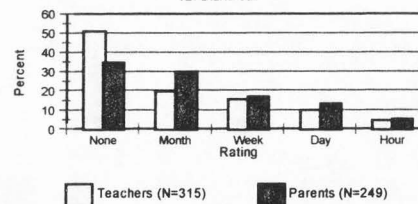
10. Unable to tolerate delays

**Teacher - Parent Item Comparison**

11. Becomes overexcited

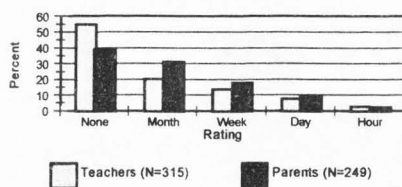
**Teacher - Parent Item Comparison**

12. Blurts out



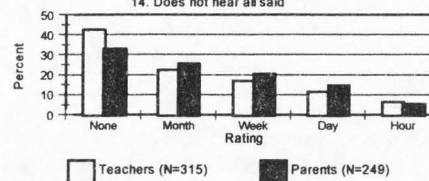
Teacher - Parent Item Comparison

13. Rushes chores/tasks



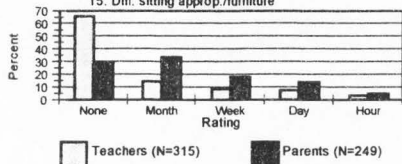
Teacher - Parent Item Comparison

14. Does not hear all said



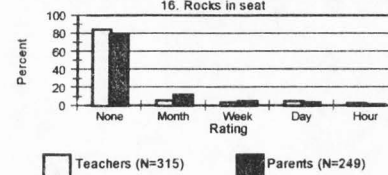
Teacher - Parent Item Comparison

15. Diff. sitting approp./furniture



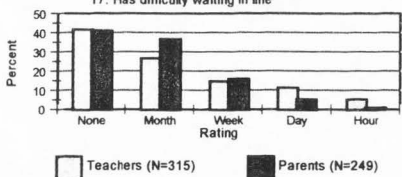
Teacher - Parent Item Comparison

16. Rocks in seat



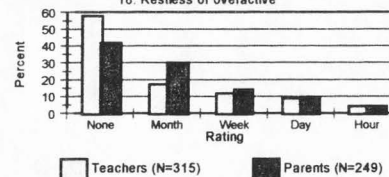
Teacher - Parent Item Comparison

17. Has difficulty waiting in line



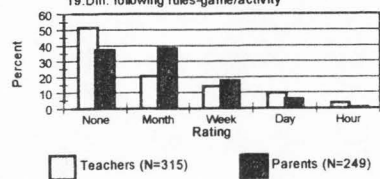
Teacher - Parent Item Comparison

18. Restless or overactive



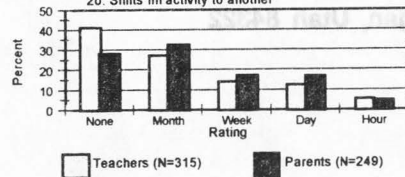
Teacher - Parent Item Comparison

19. Diff. following rules-game/activity



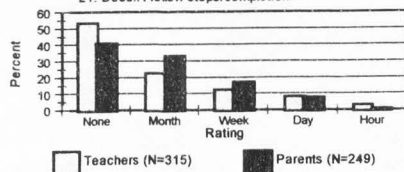
Teacher - Parent Item Comparison

20. Shifts fm activity to another



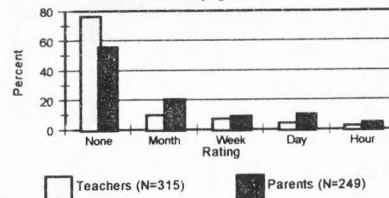
Teacher - Parent Item Comparison

21. Doesn't follow steps/completion



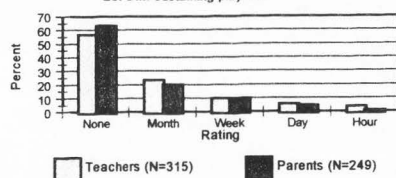
Teacher - Parent Item Comparison

22. Odd or annoying noises



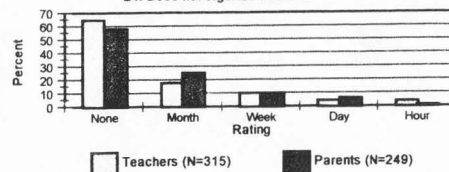
Teacher - Parent Item Comparison

23. Diff. sustaining play act.



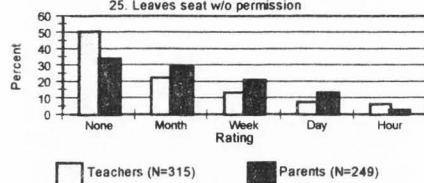
Teacher - Parent Item Comparison

24. Does not organize activities



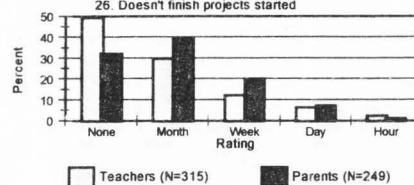
Teacher - Parent Item Comparison

25. Leaves seat w/o permission



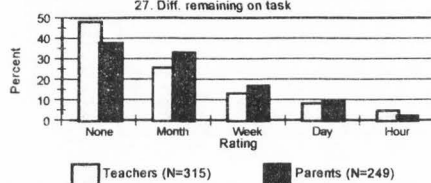
Teacher - Parent Item Comparison

26. Doesn't finish projects started



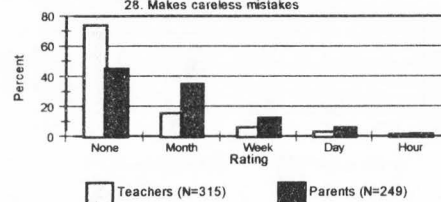
Teacher - Parent Item Comparison

27. Diff. remaining on task



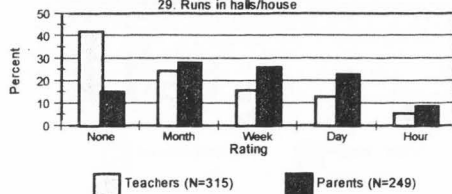
Teacher - Parent Item Comparison

28. Makes careless mistakes



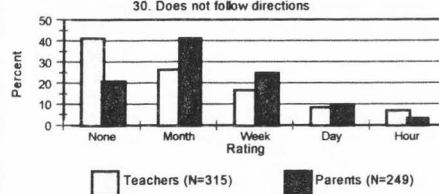
Teacher - Parent Item Comparison

29. Runs in halls/house



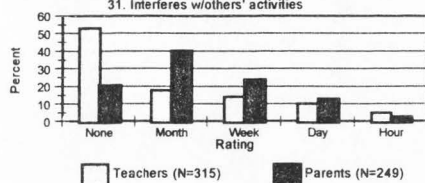
Teacher - Parent Item Comparison

30. Does not follow directions



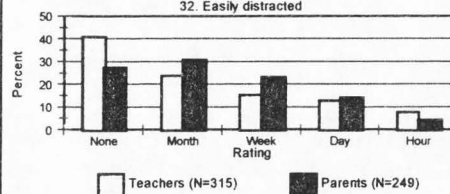
Teacher - Parent Item Comparison

31. Interferes w/ others' activities



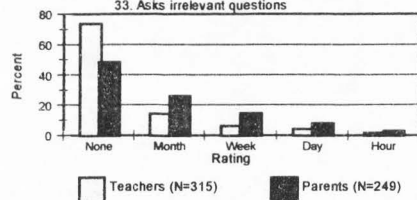
Teacher - Parent Item Comparison

32. Easily distracted



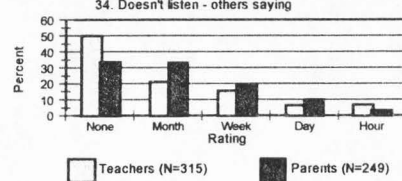
Teacher - Parent Item Comparison

33. Asks irrelevant questions



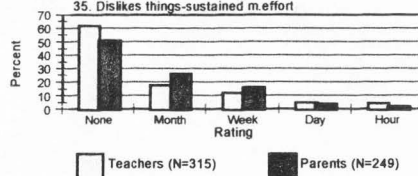
Teacher - Parent Item Comparison

34. Doesn't listen - others saying



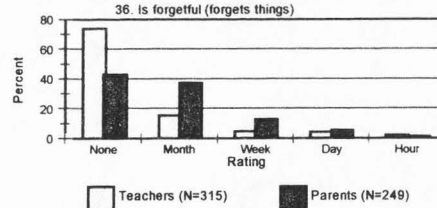
Teacher - Parent Item Comparison

35. Dislikes things-sustained m. effort

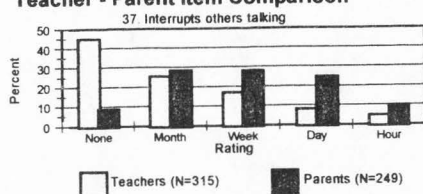


Teacher - Parent Item Comparison

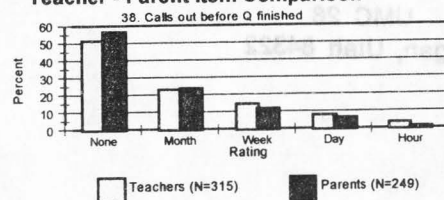
36. Is forgetful (forgets things)



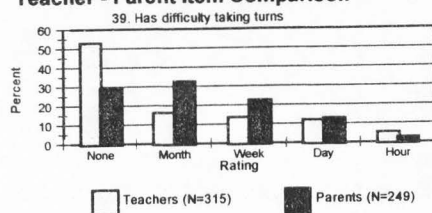
Teacher - Parent Item Comparison



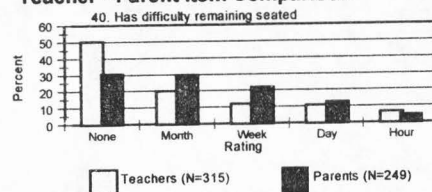
Teacher - Parent Item Comparison



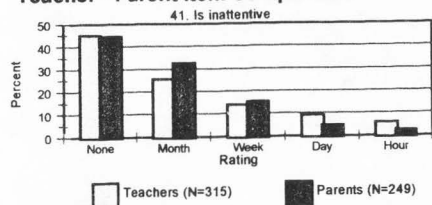
Teacher - Parent Item Comparison



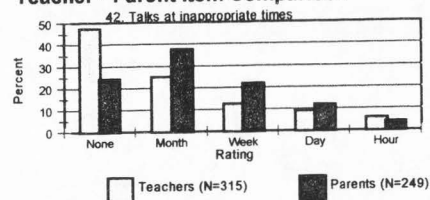
Teacher - Parent Item Comparison



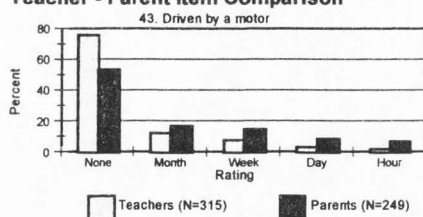
Teacher - Parent Item Comparison



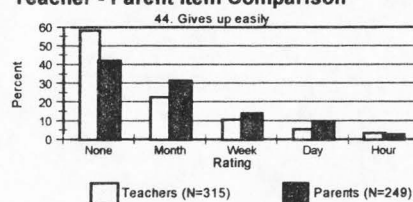
Teacher - Parent Item Comparison



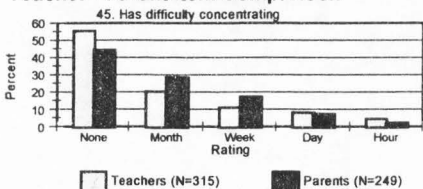
Teacher - Parent Item Comparison



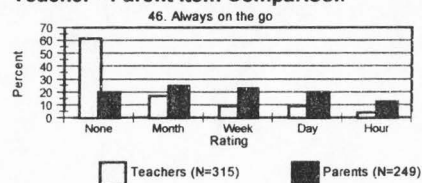
Teacher - Parent Item Comparison



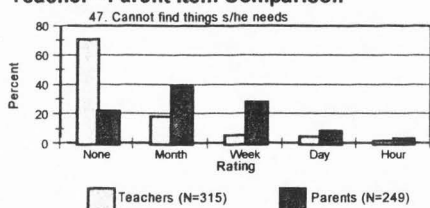
Teacher - Parent Item Comparison



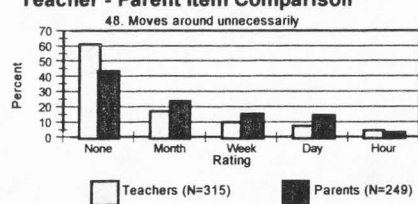
Teacher - Parent Item Comparison



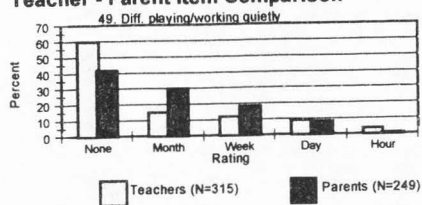
Teacher - Parent Item Comparison



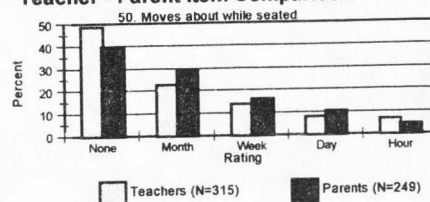
Teacher - Parent Item Comparison



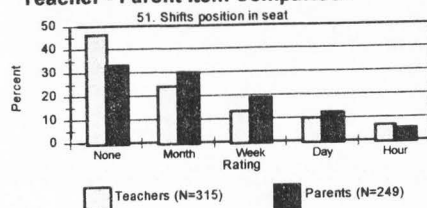
Teacher - Parent Item Comparison



Teacher - Parent Item Comparison



Teacher - Parent Item Comparison



Teacher - Parent Item comparison

